



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/634,103	08/01/2003	Brian R. Johnson	1604-459	5859
22442	7590	06/03/2005	EXAMINER	
SHERIDAN ROSS PC 1560 BROADWAY SUITE 1200 DENVER, CO 80202			THOMAS, BRANDI N	
			ART UNIT	PAPER NUMBER
			2873	

DATE MAILED: 06/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

84

## Office Action Summary

Application No.

10/634,103

Applicant(s)

JOHNSON ET AL.

Examiner

Brandi N. Thomas

Art Unit

2873

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on Amendment filed on 3/14/05.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 2 is/are allowed.
- 6) ☒ Claim(s) 1,3-18,22,24-28 and 31 is/are rejected.
- 7) ☒ Claim(s) 19-21,23,29,30 and 32 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 August 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 3/14/05.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☒ Other: Detailed Action.

## DETAILED ACTION

### *Information Disclosure Statement*

1. Acknowledgement is made of receipt of Information Disclosure Statement(s) (PTO-1449) filed 3/14/05. An initialed copy is attached to this Office Action.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claim 1, 3-9, 11-18, 22, 24-28, and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seeser et al. (US 2002/0191268 A1) in view of Nakano et al. (4615033).

Regarding claim 1, Seeser et al. discloses, in figure 1, a correlated filter device, comprising: a compensation stack (112, 114, 116, 118, 120, 122, 124, 126, 130) including a plurality of layers (134, 136, 138, 140, 142) but does not specifically disclose wherein an optical thickness of at least some of said layers of said compensation stack do not equal an integer multiple of one-quarter of a wavelength of light having a first wavelength corresponding to a first passband of said filter device having a first center wavelength. Nakano et al. disclose, in figure 3, an optical thickness of at least some of said layers of said compensation stack do not equal an integer multiple of one-quarter of a wavelength of light having a first wavelength corresponding to a first passband of said filter device having a first center wavelength (col. 5, lines 21-24). Therefore it would have been obvious to one having ordinary skill in the art at the

Art Unit: 2873

time the invention was made to combine the device of Seeser et al. with the compensation stack of Nakano et al. for the purpose of output coupling a mirror (col. 5, lines 21-24).

Regarding claim 3, Seeser et al. discloses, in figure 1, a correlated filter device, wherein said optical thickness of a layer comprises a distance equal to a thickness of said layer multiplied by an index of reaction of said layer (section 0042).

Regarding claim 4, Seeser et al. discloses, in figure 1, a correlated filter device, wherein said first wavelength is a wavelength of light in a vacuum (section 0071).

Regarding claim 5, Seeser et al. discloses, in figure 1, a correlated filter device, further comprising: an optical cavity (section 0042).

Regarding claim 6, Seeser et al. discloses, in figure 5C, a correlated filter device, further comprising a reflective stack (204, 206, 208) including a plurality of layers (section 0072), wherein a said compensation stack is associated with a first reflective surface (204) of said optical cavity, and wherein said compensation stack comprises a second reflective surface (216) of said optical cavity (section 0072).

Regarding claim 7, Seeser et al. discloses, in figure 1 and 5C, a correlated filter device, wherein said optical cavity has an optical thickness greater than ten of said first wavelengths (section 0051).

Regarding claim 8, Seeser et al. discloses, in figure 1 and 5C, a correlated filter device, wherein said optical cavity comprises an etalon (section 0015).

Regarding claim 9, Seeser et al. discloses, in figure 1 and 5C, a correlated filter device, wherein said etalon comprises at least one of a Silicon etalon and a Germanium etalon (section 0044).

Art Unit: 2873

Regarding claim 11, Seeser et al. discloses, in figure 1 and 5C, a correlated filter device, further comprising: a plurality of optical cavities (section 0042).

Regarding claim 12, Seeser et al. discloses, in figure 1 and 5C, a correlated filter device, wherein at least some of said optical cavities are formed as layers within said compensation stack (sections 0050-0052).

Regarding claim 13, Seeser et al. discloses, in figure 1 and 5C, a correlated filter device, wherein said plurality of optical cavities comprise layers within a filter having an optical thickness at least as great as one-half of said first center wavelength (section 0052).

Regarding claim 14, Seeser et al. discloses, in figure 1 and 5C, a correlated filter device, wherein said compensation stack comprises high index of refraction layers formed from

Germanium and low index of refraction layers formed from Silicon Monoxide (sections 0054 and 0067).

Regarding claim 15, Seeser et al. discloses, in figure 1 and 5C, a correlated filter device, further comprising: a bandpass filter (sections 0006 and 0007).

Regarding claim 16, Seeser et al. discloses, in figure 1, a system for sensing atmospheric trace gases, comprising: at least a first optical cavity (figure 1); a first reflective stack (112) forming a first reflective surface (132) of said optical cavity, said first reflective stack (112) including a plurality of thin film layers (section 0052) and a second reflective stack (114) forming a second reflective surface (134) of said optical cavity but does not specifically disclose wherein an optical thickness of at least some of said layers of said compensation stack do not equal an integer multiple of one-quarter of a wavelength of light having a first wavelength corresponding to a first passband of said filter device having a first center wavelength. Nakano

Art Unit: 2873

et al. disclose, in figure 3, an optical thickness of at least some of said layers of said compensation stack do not equal an integer multiple of one-quarter of a wavelength of light having a first wavelength corresponding to a first passband of said filter device having a first center wavelength (col. 5, lines 21-24). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the device of Seeser et al. with the compensation stack of Nakano et al. for the purpose of output coupling a mirror (col. 5, lines 21-24).

Regarding claim 17, Seeser et al. discloses, in figure 1, a system for sensing atmospheric trace gases, wherein said at least a first optical cavity comprises an etalon having an optical thickness greater than about ten times said wavelength of light at said first passband of said system (sections 0015 and 0051).

Regarding claim 18, Seeser et al. discloses, in figure 1, a system for sensing atmospheric trace gases, wherein said etalon comprises at least one of a Silicon and a Germanium etalon (section 0044).

Regarding claim 22, Seeser et al. discloses, in figure 1, a system for sensing atmospheric trace gases, wherein said first reflective stack comprises Germanium high index refraction layers and Silicon Monoxide low index of refraction layers (section 0044).

Regarding claim 24, Seeser et al. discloses, in figure 1, a system for sensing atmospheric trace gases, comprising: a correlation filter including: a plurality of thin film layers and a plurality of low index of refraction layers (section 0052) and a plurality of optical cavities (figure 1) but does not specifically disclose wherein an optical thickness of at least some of said layers of said compensation stack do not equal an integer multiple of one-quarter of a wavelength of

Art Unit: 2873

light having a first wavelength corresponding to a first passband of said filter device having a first center wavelength. Nakano et al. disclose, in figure 3, an optical thickness of at least some of said layers of said compensation stack do not equal an integer multiple of one-quarter of a wavelength of light having a first wavelength corresponding to a first passband of said filter device having a first center wavelength (col. 5, lines 21-24). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the device of Seeser et al. with the compensation stack of Nakano et al. for the purpose of output coupling a mirror (col. 5, lines 21-24).

Regarding claim 25, Seeser et al. discloses, in figure 1, a system for sensing atmospheric trace gases, wherein said plurality of optical cavities comprise thin film layers having an optical thickness of at least one-half a wavelength of said first wavelength (section 0052).

Regarding claim 26, Seeser et al. discloses, in figure 1, a system for sensing atmospheric trace gases, wherein passbands of said system are not regularly spaced (figure 1, the spacers are periodically located within the compensation stack).

Regarding claim 27, Seeser et al. discloses, in figure 5C, a system for sensing atmospheric trace gases, further comprising: a substrate (214), wherein said compensation stack is interconnected to a first surface of said substrate (214) (section 0072).

Regarding claim 28, Seeser et al. discloses, in figure 5C, a system for sensing atmospheric trace gases, further comprising: a bandpass filter stack, including a plurality of high index of refraction thin film layers and a plurality of low index of refraction thin film layers interconnected to a second surface of said substrate (section 0072).

Art Unit: 2873

Regarding claim 31, Seeser et al. discloses, in figure 5C, a system for sensing atmospheric trace gases, wherein said high index of refraction layers comprise Germanium and said low index of refraction layers comprise Silicon Monoxide (section 0044).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Seeser et al. (US 2002/0191268 A1) in view of being well known.

Regarding claim 10, Seeser et al. teaches the claimed invention except that it does not show an a Silicon etalon with a thickness of about 386.5  $\mu\text{m}$ . It would be obvious to use a etalon with a thickness of 386.5  $\mu\text{m}$ , since it has been held that discovering the optimum value of a result effective variable involves only routine skill in the art (In re Boesch, 617 F. 2d 272, 205 USPQ 215 (CCPA 1980)). Therefore it would have been obvious to someone of ordinary skill in the art at the time the invention was made to use an etalon with a thickness of 386.5  $\mu\text{m}$  for the purpose of the frequency of the carrier signal.

***Allowable Subject Matter***

6. Claim 2 is allowed.

Art Unit: 2873

7. Claims 2, 19-21, 23, 29, 30, and 32 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The prior art taken either singularly or in combination fails to anticipate or fairly suggest the limitations of the independent claim(s), in such a manner that a rejection under 35 U.S.C. 102 or 103 would be proper. The prior art fails to teach a combination of all the claimed features as presented in claim(s) 2, 19-21, 23, 29, 30, and 32, wherein the claimed invention comprises a correlated filter device comprising: a second passband having a second center wavelength and a third passband having a third center wavelength; and a system for sensing atmospheric trace gases, wherein said first reflective stack (112) comprises a compensation stack, wherein passbands of said system are not regularly spaced, and wherein said second reflective stack comprises a bandpass filter and wherein said system includes at least six passbands, and wherein each of said six passbands is centered at an absorption line of an atmospheric gas, and a detector, wherein light having a wavelength within said first passband, a second passband, and a third passband of said system is received at said detector, and wherein said first, second, and third passbands are separated from one another by different amounts, as claimed.

#### ***Response to Arguments***

8. Applicant's arguments filed 3/14/05 have been fully considered but they are not persuasive. Seeser does describe a filter device in which the thickness and relative thicknesses of

Art Unit: 2873

the various layers and regions are exemplary, and many other configurations are possible (section 0051).

### *Conclusion*

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

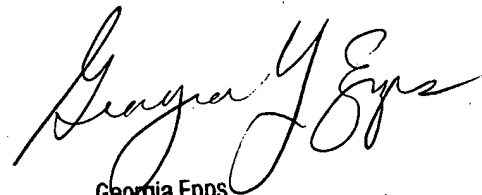
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brandi N. Thomas whose telephone number is 571-272-2341. The examiner can normally be reached on 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on 571-272-2328. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2873

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*BNT*  
BNT

  
Georgia Epps  
Supervisory Patent Examiner  
Technology Center 2800